Historic, Archive Document

Do not assume content reflects current
scientific knowledge, policies, or practices.

PROTECTIVE PACKAGING FOR PARACARGO

BY

Equipment Development & Testing Center
Missoula, Montana
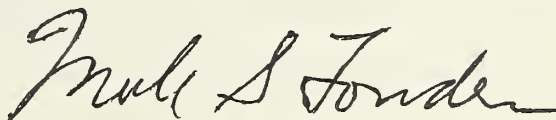
U. S. DEPARTMENT OF AGRICULTURE

FOREST SERVICE

WASHINGTON D.C.

February 1964

Guidelines for packaging and rigging paracargo as

described in ED&T Report No. 5700-6 are approved

for optional U.S. Forest Service use.

MERLE S. LOWDEN, Director
Division of Fire Control

CONTENTS

ABSTRACT

The purpose of Equipment Development and Testing Project No. 718, Protective Packaging for Paracargo, was to develop better methods of packaging supplies and equipment to be parachuted to firefighters.

Fiberboard was selected as having the most desirable qualities for containers. Honeycomb paper proved to be an effective and practical shock pad.

Instructions for packaging common Forest Service tools and supplies are included in this report.

The project was coordinated with ED&T 1113, Cargo Conveyors for DC-3 and C-46 Aircraft.

INTRODUCTION

A survey of paracargo operations in the Western Regions revealed these shortcomings in packaging firefighting tools and supplies:

1. Lack of standardization in packaging procedures.

2. Use of unduly expensive packaging materials.

3. Use of time consuming packaging techniques.

4. Frequent cargo damage due to insufficient protection.

5. Reduction of net payload caused by weight and bulk of packaging materials (wooden boxes).

This project was initiated to develop more efficient packaging materials and practices. The general objectives were:

1. Reduce the cost, size and weight of packages.

2. Increase parachute payloads with improved packaging and padding.

3. Investigate the feasibility of free-falling fire cargo, thus eliminating the problems of parachute delivery.

Because of the danger to ground personnel, development of free-drop packaging for fire tools was deferred. Efforts were concentrated on the first and second objectives, improved paracargo packaging.

Of the many cushioning materials investigated, honeycomb paper was judged best, being inexpensive, easily handled and highly shock absorbent.

Fiberboard proved to be the most effective container material. It is light, easily stored, inexpensive, versatile and easily handled. The Forest Products Laboratory, Madison, Wisconsin, gave valuable assistance in selecting the proper fiberboard.

A project for developing roller conveyors (ED&T 1113) for loading and ejecting large cargo units from DC-3 and C-46 aircraft was undertaken. Coordination of the two projects resulted in a system for consolidating small packages into large, pallet-mounted units, to be loaded and dropped over roller conveyors.

The procedures described herein are intended as a general guide and may require modification to meet local needs and conditions. The scope of the project did not permit the development of packaging

procedures for all items commonly parachuted to firefighters. However, by following the examples illustrated, an effective packaging system may be devised for most items.

The usefulness of the methods covered in this report extends beyond packaging paracargo. Applied to other Forest Service warehousing or delivery operations, these methods can save manpower, material costs, storage space and can reduce damage.

SUMMARY AND CONCLUSIONS

The use of fiberboard boxes and honeycomb cushioning for packaging paracargo can:

1. Reduce cargo damage.

2. Increase net payload of aircraft.

3. Reduce costs of packaging materials.

4. Reduce space required for storage of empty containers.

Individual items consolidated onto pallets and dropped from aircraft over roller conveyors can reduce flying time over the drop zone by approximately one-third.

Supplies and equipment commonly parachuted to firefighters may readily be packaged with fiberboard cartons and paper honeycomb cushioning.

GUIDELINES FOR PACKAGING AND RIGGING PARACARGO

I.   Materials for Protective Packaging

Fiberboard (incorrectly called cardboard) boxes and paper honeycomb cushioning are the two major packaging materials. These materials must be kept dry.

A.   Fiberboard Boxes

Fiberboard boxes made of 500- or 600-pound double-wall (AB flute), corrugated fiberboard proved best for packaging paracargo.

Size, style and fiberboard strength must be specified when ordering boxes. Limiting the variety of boxes minimizes costs, reduces inventory and simplifies the rigging of paracargo.

Testing was done with two styles of boxes in six sizes. Most paracargo dropped in the Western Regions can be packaged in these boxes. Chart I (appendix) lists contents that were packaged in the various boxes.

Regular slotted-style (R.S.C.) boxes can be used for a special-purpose item. For example, one regular slotted box was ordered with special dimensions for chainsaws with 18-inch bars.

The full telescopic style (F.T.C.) is versatile because its volume can be varied by raising and lowering the top section. Telescopic boxes are stronger than regular slotted boxes.

The cost of double-wall boxes varied with size, style(full telescopic boxes are more expensive) and quantity ordered. The average price was $1.75 per box for 470 boxes in six sizes and two styles. Double wall boxes are obtainable from most large manufacturers of fiberboard.

B.   Paper Honeycomb

This material protects fragile items against impact. It is manufactured in both expanded and unexpanded form. Since special tools are required to expand the honeycomb, the expanded type should be ordered. Expanded honeycomb is usually available in sheets (approximately 10 feet by 4 feet) in any thickness. The 4-inch thickness is adequate and versatile.

Honeycomb cushioning should be ordered according to these specifications:

1. Cell Size (expressed in inches)

2. Paper Weight (expressed in pounds)

3. Impregnation (percent resin treatment)

4. Facings (available faced on one side, both sides, or unfaced)

5. Thickness (expressed in inches)

Soft, expanded, unfaced and untreated honeycomb proved best. The type shown here was obtained from:

> The Verticel Company
> 3800 South Kalamath
> Englewood, Colorado

This honeycomb is designated as 3/8-inch cell size, 40-50-pound kraft paper, no (0) impregnation, unfaced.

Honeycomb costs approximately $45 per thousand board feet.

C. Strapping Materials

Cargo can be lashed to honeycomb pads with many types of cord, strap or tape. Type 65 Avistrap, equipped with a simple locking buckle, is inexpensive and requires no special tools. It was obtained from:

> Avistrap Cord Strapping
> American Viscose Corporation
> 1617 Pennsylvania Boulevard
> Philadelphia 3, Pennsylvania

(See Missoula Equipment Development Center Equip Tip, March 1962).

II. Tools and Equipment for Packaging

Fiberboard boxes are shipped "knocked down" and can be assembled using a bottom stapler or stitcher. Bostitch Model F-67 box-bottom stapler, fitted with a 9/16-inch staple head, adequately staples 500-pound, double-wall boxes. The foot powered model costs approximately $180 and an electric one about $300. An electric bottom stapler or stitcher is best for large warehousing and packaging operations.

III. Packaging Techniques and Instructions

A. Stapling Techniques

Prior to stapling, flex box flaps with and against the crease to reduce resistance against the first staples.

Figure 1 suggests a stapling pattern for regular slotted boxes which conserves staples, yet provides adequate strength.

Figure 1

Telescopic boxes have two halves, top and bottom. The manufacturer's stamp or label is found on the bottom half.

Figures 2 and 3 show how to correctly fold flaps for the top and bottom respectively.
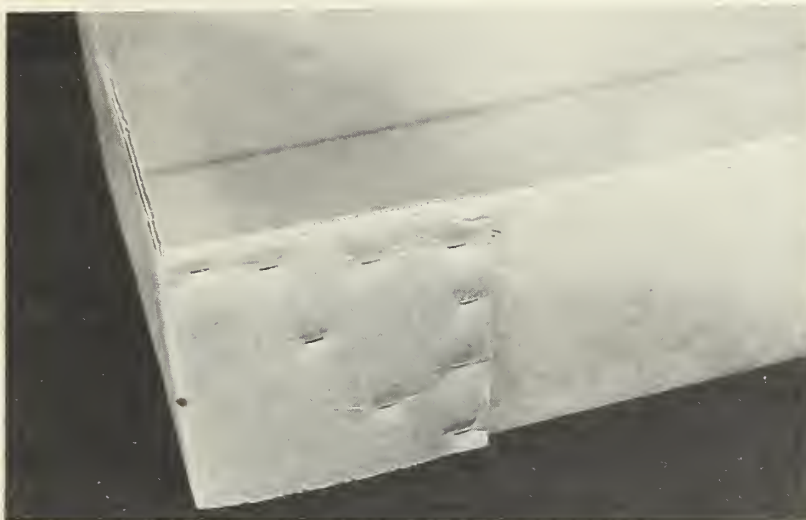
Figure 2 (Top)

Figure 3
(Bottom)

Figure 4

If close tolerances make
mating top and bottom
difficult, expand the
top section slightly.

B. General Packaging Guidelines

   1. Select the proper size box.

   2. Secure the contents of partially filled boxes with
      strapping (Figures 9 and 10), fiberboard partitions
      (Figure 10) or filling (Figure 14).

   3. Protect power tools and fragile items.

      a. Strap fragile or high-cost items to pads made of
         1/4-inch plywood and honeycomb. (Figures 9 and 11.)
         If honeycomb crushes completely on impact, cushion
         thickness is not adequate.

      b. Use fiberboard partitions. In Figure 16, Coleman
         lanterns are protectected with a fiberboard partition.

   4. Put heavy, durable items on the bottom of the box.

C. Examples of Protective Packaging

   The following photographs and instructions are intended only
   as a guide. Weights, contents, box sizes and style are
   given in Appendix I.

   Packaging Instructions:

   1. Sheathe cutting edges. A
      good sheath can be made
      from fiberboard.

   2. Place five axes in box,
      cover with a full-size
      sheet of fiberboard,
      then place second five
      axes.

   3. Approximately 20 axes
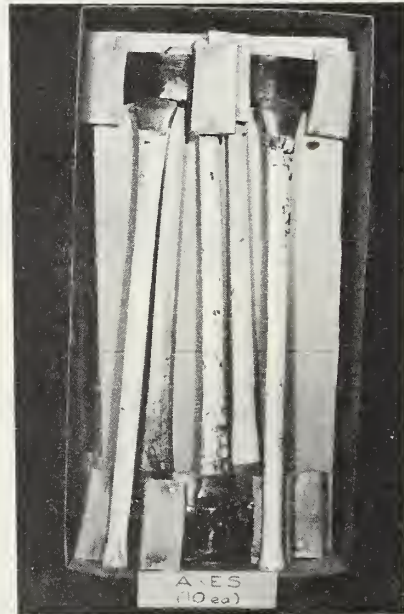   can be packaged in this
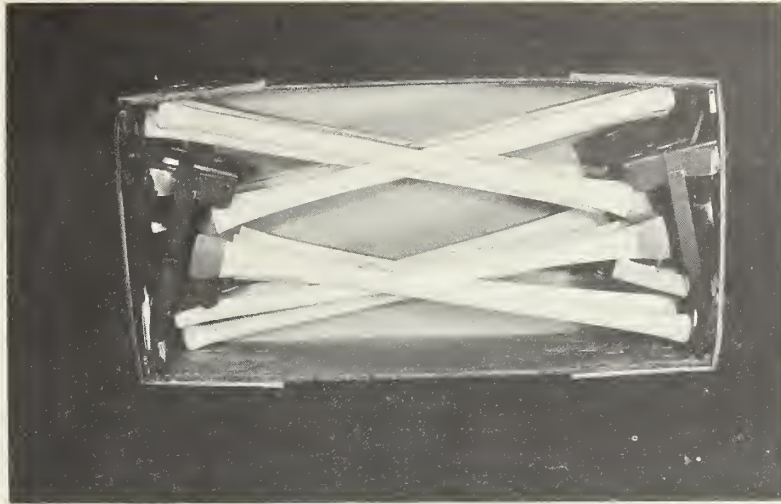   box.

Figure 5
Axe Box

Figure 6
Pulaski Box

Packaging Instructions:

1. Sheathe all cutting edges. Place additional pieces of fiberboard on bottom of box underneath heads for additional protection and strength.

2. Place cutting edges to center.
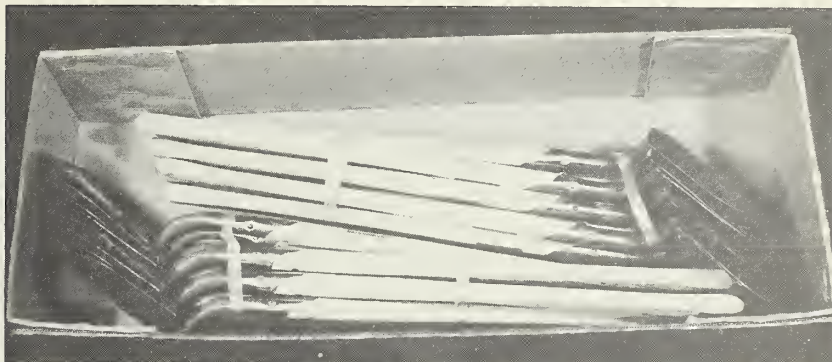
3. Alternate the heads.

Figure 7
Shovel Box

Packaging Instructions:

1. Place additional pieces of fiberboard on bottom of box, underneath shovel heads.

2. Tape handles.

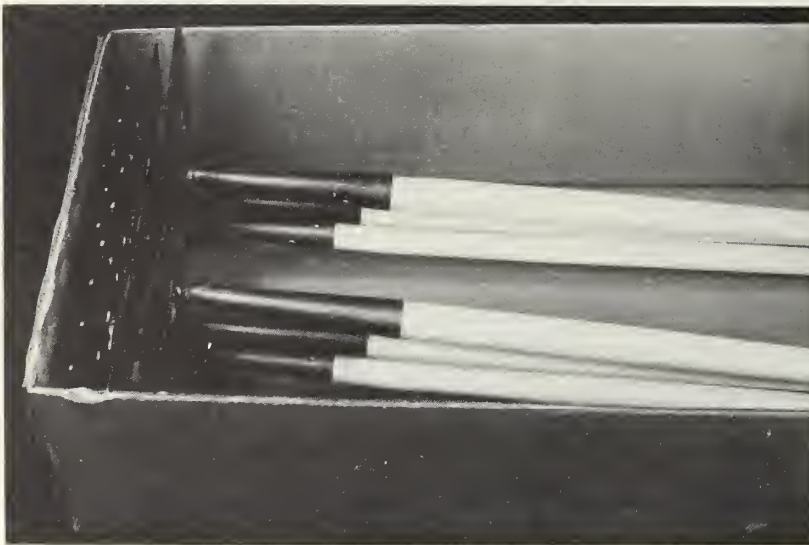3. Place in box as shown in photograph.

Figure 8
McCloud Tools

Packaging Instructions:

1. Place additional pieces of fiberboard on bottom of box,
    underneath tool heads.

2. Tool heads are placed at both ends of box; photograph
    shows how heads can be mated. Approximately 12 McCloud
    tools can be packaged in this manner. (See Appendix I.)

Figure 9
Chainsaw

Figure 10
Chainsaw
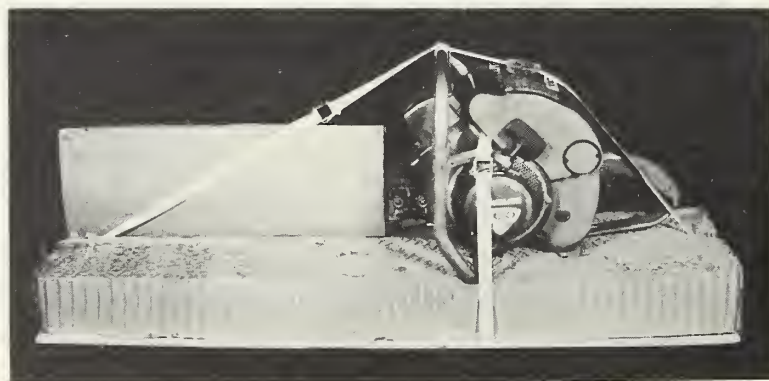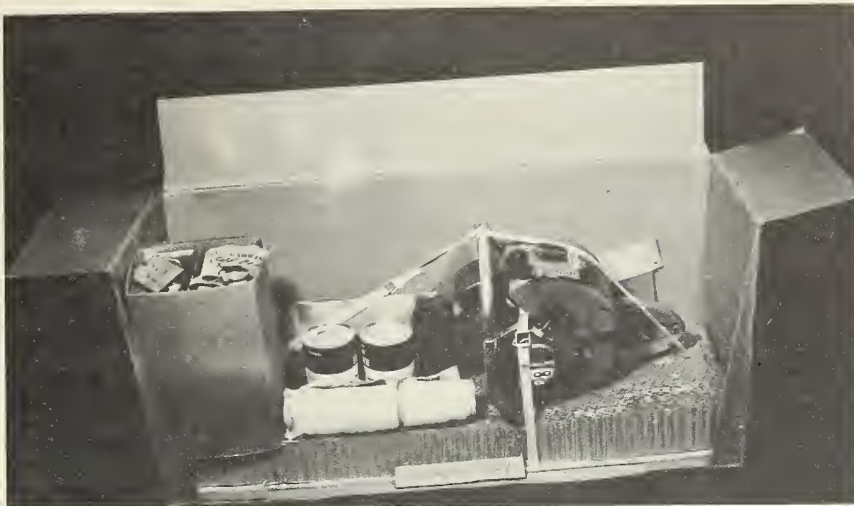
Packaging Instructions:

1. Sheathe the bar with fiberboard.

2. Strap the saw to base of 4-inch honeycomb and 1/4-inch plywood.

3. Place saw unit in box. Fit in remaining contents so they are secure.

4. Protect gasoline with fiberboard partition. This partition should extend from the honeycomb to the top of the box, helping to secure the saw base.
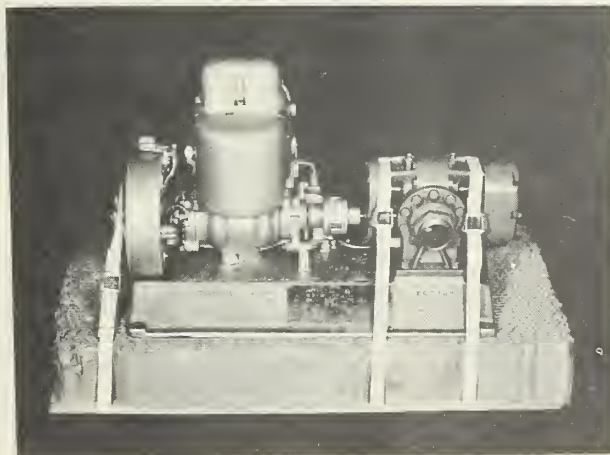

Figure 11
Pacific Pump (Type Y)
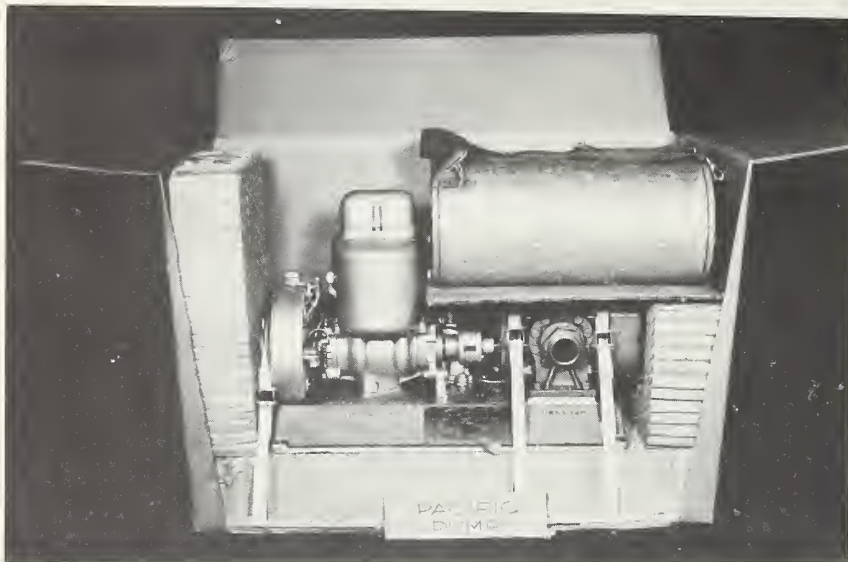
Figure 12
Pacific Pump (Type Y)

Packaging Instructions:

1. Strap pump to base of 4-inch honeycomb and 1/4-inch ply-wood.

2. Put pump unit in box and cushion ends with 4-inch honeycomb.

3. Place a piece of fiberboard over the pump section to protect the gas tank.
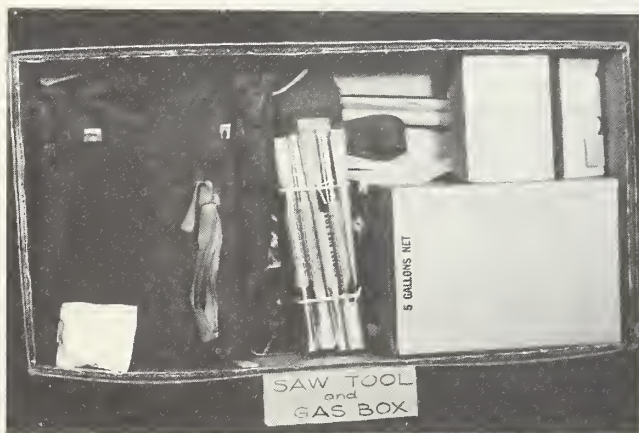
Figure 13
Saw Tool and Gas Box
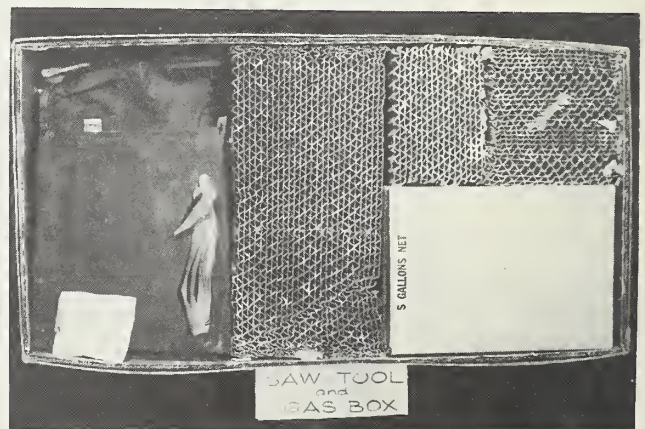
Figure 14
Saw Tool and Gas Box

Packaging Instructions:

1. No special arrangement. Follow general instructions.

2. Fill vacant spaces with honeycomb.

Packaging
Instructions

1. No special
    arrangement.
    Follow general
    instructions.
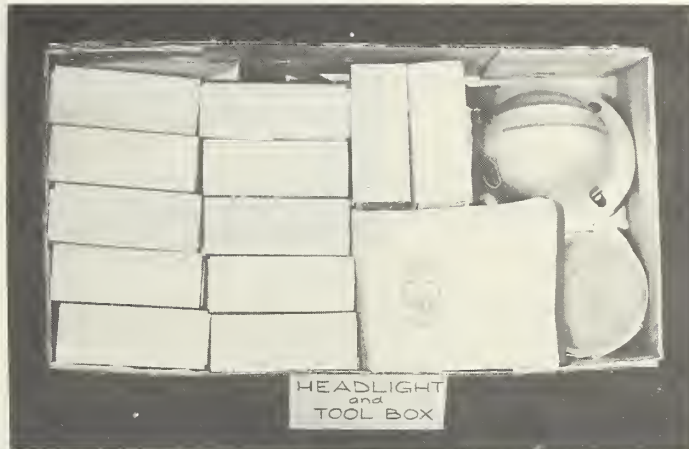
Figure 15
Headlight and Tool Box

Packaging
Instructions:

1. Protect
    Coleman
    lanterns
    with
    fiberboard
    partitions.

2. Put remain-
    ing items
    in box.

Figure 16
Mess Box and Mess Boiler

1. Place fly on
    bottom of box

2. Use full size
    fiberboard
    separator on
    top of fly.

3. Set stove
    unit on top.

Figure 17
Stove and Fly

Figure 18
Water Box

Packaging Instructions:

1. Place a 4-inch piece of honeycomb in bottom of box.

2. Water cans should be filled and wiped dry before placing
    in boxes.

3. Avoid spilling water on box. Make certain caps are on
    tight.

IV. Materials for Rigging Paracargo

A. Cargo Straps

Straps of cotton or nylon webbing having a tensile strength in excess of 2,900 pounds are used to sling the packages from the parachute. A quick-adjustable parachute harness lug sewn to the strap facilitates tightening (Drawing ED-242-R1).

The length and number of straps required for various packages and pallet units are included in Appendix I and II.

Color coding the ends of cargo straps simplifies the identification of their length. For example:

Strap Length	Color
6 feet	Blue
8 feet	Black
10 feet	Red
12 feet	Yellow
14 feet	Orange

Aerosol spray paints are good for color coding strap ends.

B. Cargo Strap Cross-Ties

On pallet units, cross-ties link the cargo straps for a single-point parachute attachment. Cross-ties are made from cotton or nylon webbing having a tensile strength in excess of 5,000 pounds (Drawing ED-242-R1). (Refer to Figures 24 and 28.)

C. Fiberboard Pallets

Fiberboard and honeycomb drop pallets are used with an aircraft roller conveyor system.

Two or more boxes are stacked on a pallet and strapped together to make a single unit. These pallets are usually dropped with two or three parachutes, depending on contents and weight.

Pallets are 28 inches square, approximately $3\frac{1}{2}$ inches thick and have two-way entry for fork lifts. Pallets can be purchased or can be constructed according to Drawing No. ED-237-R1.
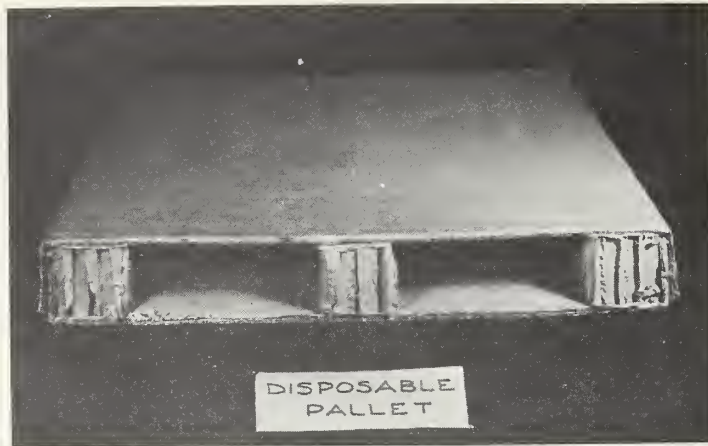
Figure 19

V. Guidelines for Rigging Individual Boxes

A. Cargo Strap Arrangements

One strap encircles the box lengthwise and a second encircles
its width. It is designated as Arrangement I. (Figure 20.)

Figure 20

B. Parachute Requirements

One standard Forest Service 24- or 28-foot parachute is
attached to the top of the box where the slings intersect.

Do not exceed a load of 160 pounds* for a 24-foot parachute.

* The standard recommended load for a 24-foot parachute is 144 pounds.
  This can be exceeded if the cargo is adequately protected.

VI. Guidelines for Rigging Pallet Units

A. Stacking Boxes

Guidelines for arranging boxes on a pallet are:

1. Use boxes similar in size and contents to make up a pallet, i.e., handtools with handtools, etc.

2. Put the largest and heaviest boxes on the bottom.

3. Boxes containing fragile items (unless they are well protected) should not be placed on the bottom.

4. Boxes should not exceed pallet width by more than 2 inches.

5. When possible, use telescopic style boxes on the bottom because they are stronger. However, consider size, contents, and weight first.

6. Total pallet weight, without parachutes, should not exceed 550 pounds.

B. Cargo Strap Arrangements

Place cargo straps to prevent loss of boxes on opening shock. Arrangement of boxes on a pallet will determine where to position the cargo straps.

1. Single stacking -- boxes are stacked as shown in Figures 21 and 22. For this type pallet unit, two straps encircle the width and two the length of the unit. Straps which run lengthwise are threaded through forklift entry slots. This strapping method is designated Arrangement II.

Figure 21

HEADLIGHT
& TOOL BOX

AXES

GAS & SAW
TOOL BOX

PULASKI
TOOLS
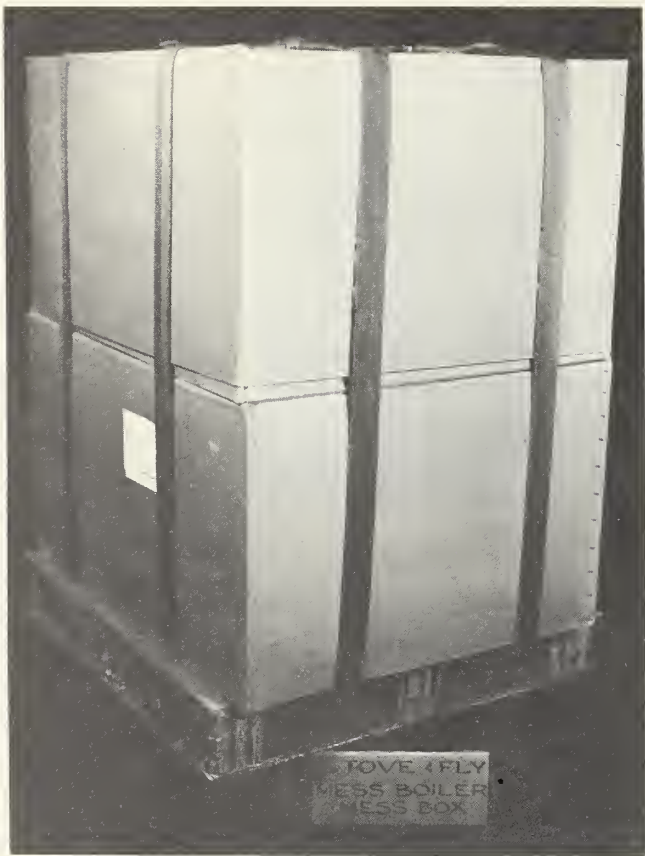
Figure 22

2. Two boxes
side by
side --
cargo strap
Arrangement
II is also
used for
pallets of
this nature.
Center the
lengthwise
straps on
the center
of the box
ends as in
Figure 23.

Figure 23

Figures 24 and 25 show the sling cross-ties for Arrangement II
and how the parachutes are attached.

Figure 24

Figure 25

3. Double-row stacking --
   cargo strap Arrange-
   ment II is again used.
   Straps should be
   centered on the
   box ends. (See
   Figure 26.)

Figure 26

Check straps for
tightness before
ejecting pallets.
Loose straps could
permit load to
come apart on open-
ing shock. Most
webbing relaxes
with changes in
humidity and pro-
longed tension.
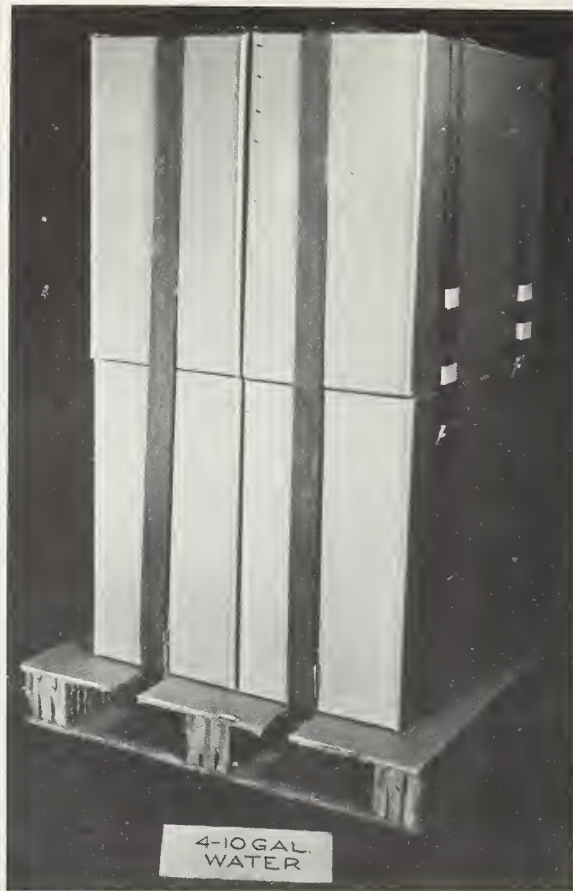
4. Three boxes
   side by side --
   This pallet
   load requires
   an additional
   cargo strap
   to retain the
   box ends.
   This strap
   arrangement
   is designated
   Arrangement
   III. (Figure 27)
   Cargo strap
   cross-tie
   attachment is
   shown in
   Figure 28.

Figure 27

Figure 28
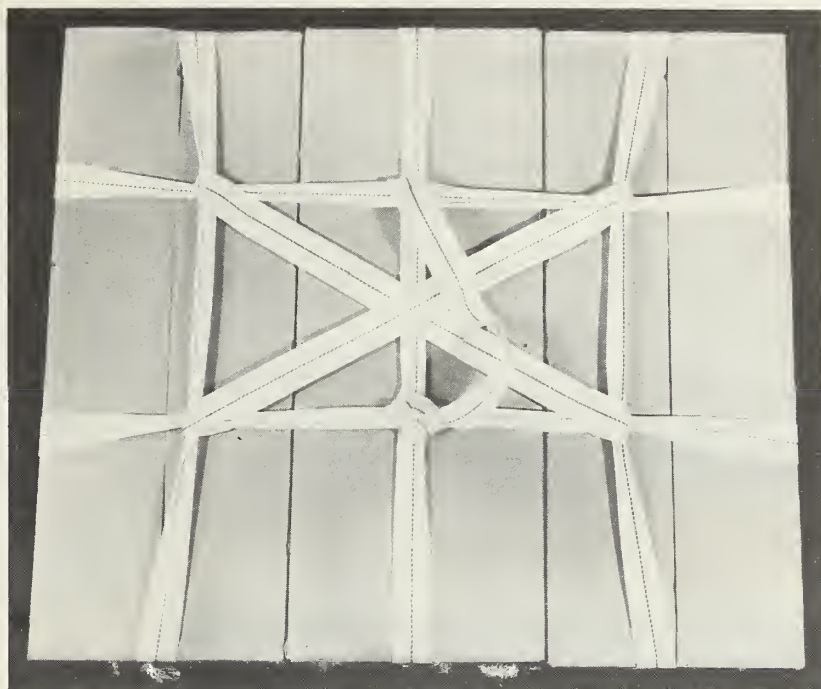
5. Triple-row stacking -- should it be necessary to stack
    three boxes abreast, use strap Arrangement III. Note:
    Cargo strap Arrangement III should be used for weights
    in excess of 360 pounds.

C. Cargo Parachute Modifications

The deployment system of the Forest Service cargo parachute
must be modified for pallet units.

A pallet may be dropped with one, two or three parachutes,
depending on weight or contents. When more than one is used,
parachutes may be deployed by one static line with appendages
(Figure 31) or separate static lines for each parachute
(Figure 30). These static lines differ from conventional
static lines because they are tied to the parachute apex with
1/4-inch break tape, rather than snapped to the customary
ring. Also, the static lines are longer and are used with
an overhead anchor cable.
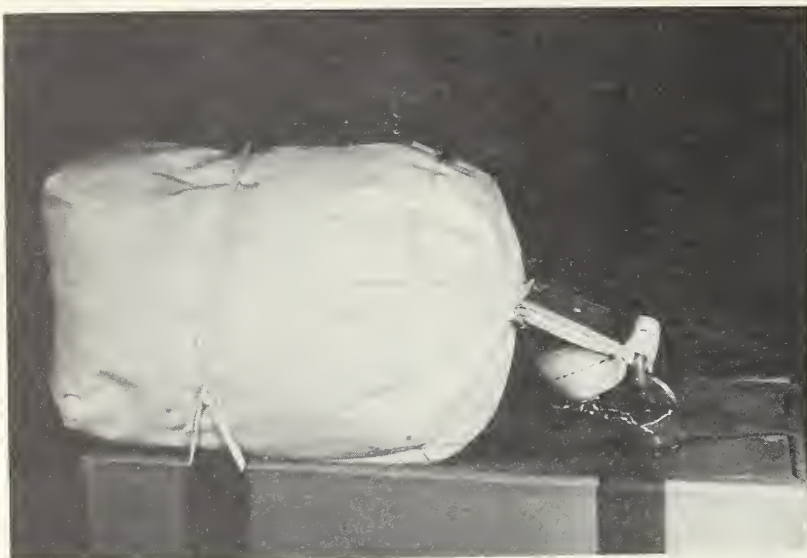
Figure 29

Tape securing para-
chute is threaded
through static line.

Figure 30

1. Description of static lines. Type T-7A military cargo
    parachute static lines, or equivalent, can be used.
    (See Drawing No. ED-242-R1.)

2. Static line appendages. Short sections (about 18 inches
    long) of static line webbing can be knotted (bowline)
    to the main static line for deploying additional para-
    chutes. A loop for attaching the parachute breakcord
    is also formed by a bowline, as shown in Figure 31.

Figure 31

Static line system
for two parachutes.

Two or three parachutes can be deployed by one static
line with appendages.

3. Attaching static lines to cargo parachutes (see Figure 31).
    The end loop of the static line or appendage is tied to
    the parachute bridle cord with two continuous wraps of
    1/4-inch (80-pound test) break tape. The bag is then
    closed with one strand of 8-cord, which passes through
    the end loop of the static line or appendage.

D. Parachute Requirements

The following guide specifies the number of parachutes to
use with various cargo weights:

Number of 24-foot Parachutes	Load
1	Up to 180 pounds
2	180 to 360 pounds
3	360 to 540 pounds

These are maximum loads and should not be exceeded.

Note: The recommended load for a 24-foot parachute is 144
pounds. This may be increased to 160 pounds when the cargo
is protectively packaged and 180 pounds when both protective
packaging and a pallet are used.

E. Attaching Cargo Parachutes

Attach parachutes through the center of the sling cross-ties
as shown in Figure 25. Then tie the parachutes to the top
of the boxes with a strand of cord, not exceeding 100-pound
test. The cord passes through a loop in the static line,
which breaks the tie. (See Figures 29 and 30.)

APPENDIX I
Packaging Guide

BOX NAME	BOX SIZE AND STYLE				CONTENTS (The following contents have been packaged in development work.)	HONEYCOMB	WEIGHT (Approx.)	STRAP LENGTHS	
	STYLE	\(Inside Dimensions\)						Length	Width
		L.	W.	D.					
Pulaski	F.T.C.	36"	18"	9"	Pulaskis (16 each)	None	93#	10'	6'
					Axes (10 each)	None	60#		
					Headlight and tool box (25-man standard)		60#		
					Combined saw tool and gas box (25-man standard)	None	90#		
*Shovel	F.T.C.	50"	18"	9"	Shovels (16 each)	None	75#	12'	6'
					Eastern tool package	None	68#		
Chainsaw	R.S.C.	41"	13"	19"	Chainsaw (18-inch bar)	4"	80#	12'	6'
Pump	R.S.C.	30"	15"	21"	Pacific Pump (Type Y)	4"	100#	10'	6'
					Pacific Pump (Type 5A)	4"	95#		
**Water	R.S.C.	29"	10½"	19"	3 - 5-gallon water cans	4"	130#	10'	6'
					3 - hot food cans	4"	Variable		
					Pacific Pump accessories	None	65#		
Utility	F.T.C.	30"	24"	16"	Combined mess box and boiler (25-man standard)	None	150#	10'	8'
					Stove and fly unit (25-man supplemental)	None	106#		
					Combined mess boiler and safety hat package (25-man supplemental)	None	110#		

* Shovels and McCloud tools can be packaged in the same box if box length is increased to 55 inches.

** If 5-gallon plastic water bottles are used in place of 5-gallon cans, box should have following inside dimensions:

$$\underline{L} \quad \underline{W} \quad \underline{D}$$
36" 12" 16"

Tools (Hand)

Axe Box
Contents:

10 each axes, $3\frac{1}{2}$-pound, D.B.

Pulaski Box
Contents:

16 each Pulaski Tools

Shovel Box
Contents:

16 each shovels, size No. 0

Saw Tool and Gas Box
Contents:

2 each cases, wedge, canvas	6 each handles, file
2 each hammers, S.J., 4-pound	4 each handles, e.c. saw
12 each files, 8-inch, M.B.	2 each wedges, felling, $2\frac{1}{2}$-pound
72 each batteries, flashlight	1 each wedge, felling, 4-pound
12 each fusees, backfiring	2 gals. gasoline, lantern
4 each sacks, pack	1 each kit, timekeeper's, complete
6 each stones, axe	

Headlight and Tool Box
Contents:

6 each bags, water, 2-gallon	1 each kit, medicine, R-1 standard
4 each bags, water, 5-gallon, m.p.	1 each packet, medicine, 1-man
2 each canteens, water, 2-quart	1 each padlock, common, with chain
3 each hats, safety, hard	1 pair pliers, common, 6-inch
12 each headseats, flashlight	2 each pumps, hand, spray
1 each screwdriver, 6-inch	4 pkgs. towels, paper, 250 each, folding, with dispensers

Tools (Power)

Chainsaw Box
Contents:

1 each chainsaw (18-inch bar)	1 each fire extinguisher
1 each axe, $2\frac{1}{2}$-pound, s.b.	1 each tool kit
2 each wedges, felling	2 quarts oil
1 each pack frame	2 gals. gasoline

Tools (Power)

Pacific Pump Box
Contents:

1 each Pacific Pump, Type Y
1 each 5-gallon gas tank

Camp Equipment

Mess Boiler and Mess Box
Contents:

50 each bags, cellophane
 1 each boiler, 25-man, w/lid
30 each bowls, soup, tin
 1 each box, tin, knife and fork
 1 each brush, pastry
 6 each chains, kettle, 3-foot
 1 each clock, alarm
30 each cups, tin, miner's
 2 each files, 8-inch, m.b.
 1 each fork, meat
30 each forks, dinner
 2 each knives, butcher
 2 each knives, paring
30 each knives, dinner
 2 each lifters, pot
 1 can lye, 13-ounce
 1 each masher, potato
 1 can matches, safety, 4 boxes
 4 lbs. nails, 20 and 40 D common
 2 each openers, can, hand-operated

 2 each pails, coffee, half-oval,
   with lid
 1 each pail, cooking, 6-quart
   with lid
 1 each pail, cooking, 13-quart
   with lid
 2 each pans, bread, large and small
 4 each pans, 3-quart, enamel
12 each pans, dishup, 3-quart, tin
30 each plates, pie, tin, 9-inch
30 each sacks, cloth, 10-pound
 6 bars soap, hand
 6 pkgs. soap, detergent, 6-ounce
 2 each spoons, stirring
12 each spoons, table
30 each spoons, dessert
 1 each stone, scythe
 1 each turner, hotcake
15 each towels, dish
 1 each whip, egg

Mess Box, 25-Man Standard

 1 each bar, mosquito
 4 each basins, wash
 1 each brush, scrub
 4 each buckets, canvas, folding
 3 each cleaners, pot
 2 each funnels, Coleman #0
 3 each generators, lantern
 1 each hammer, claw

 2 each lanterns, gas, 2-burner
24 each mantles, lantern
 1 each pan, dish, 21-quart
 2 each pans, fry
 1 each saw, meat, complete
 2 rolls tissue, toilet
25 each towels, hand
 1 each wrench, lantern

Stove and Fly Box
Contents:

1 each stove, Kemmel, complete
1 each pan, drip, oven size

1 each fly, canvas, 14' x 16'
2 each pans, half-oven size

Guide for Palletizing

| UNIT NUMBER	PALLET COMPONENTS	CARGO STRAPS (No. required and length)	
		Length	Width
1	4 - Boxes (36" x 18" x 9")	2 ea. - 14'	2 ea. - 10'
2	4 - Boxes (50" x 18" x 9")	(splice) 2 ea. - 8' 2 ea. - 16'	2 ea. - 10'
3	2 - Boxes (30" x 24" x 16")	2 ea. - 12'	2 ea. - 10'
4	4 - Boxes (29" x 10½" x 19")	2 ea. - 12'	2 ea. - 10'
5	2 - Boxes (50" x 18" x 9") 1 - Box (36" x 18" x 9")	2 ea. - 14'	2 ea. - 10'

Note: Many other pallet combinations are possible; these are only examples.

APPENDIX III

Guideline for Cargo Strap Arrangements

Number of Boxes	Single Stacking	Side by Side	Double Row Stacking
1	I	-	-
2	II	II	-
3	II	III	-
4	II	-	II

Note: Use cargo strap Arrangement III for loads in excess of 360 pounds.
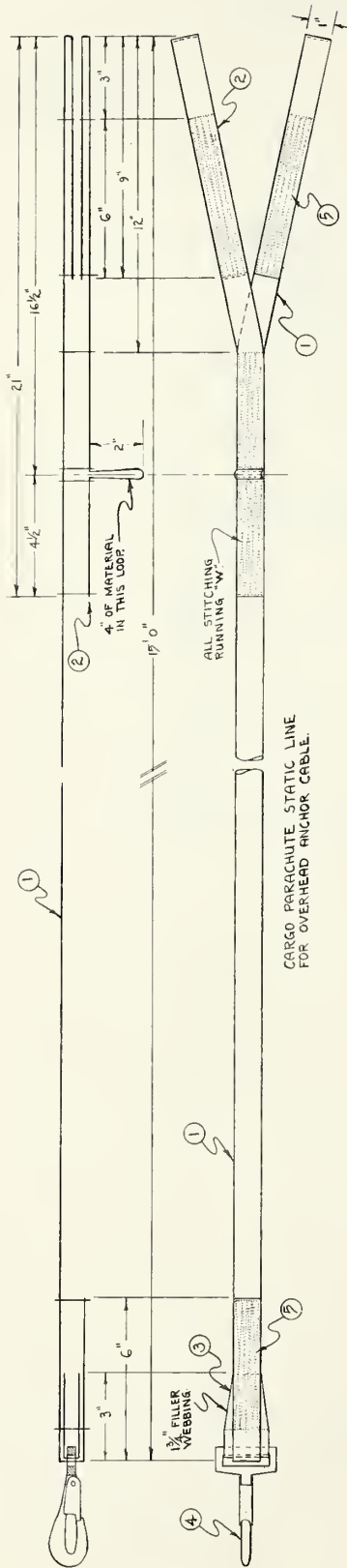
NOTE: TREAT ALL ENDS OF WEBBING TO PREVENT FRAYING.
ALL STITCHING RUNNING "W".

CARGO PARACHUTE STATIC LINE FOR OVERHEAD ANCHOR CABLE.

ALL STITCHING RUNNING "W"

4" OF MATERIAL IN THIS LOOP

1¾" FILLER WEBBING

QUICK ADJUSTABLE CARGO STRAP.

ANY REQUIRED LENGTH

CARGO SLING CROSS TIE. FOR MODULE PACKAGES.

MATERIALS LIST   - RIGGING ACCESSORIES FOR CARGO PARACHUTES

DRAWING NO. ED-242-R1

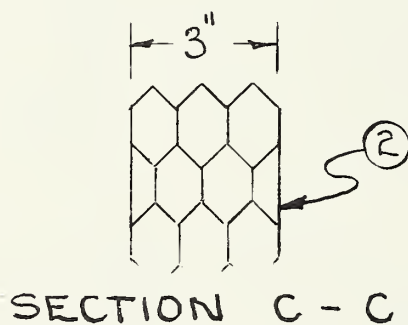| Name	Material	Part No.	No. Req	Cutting Size	Color	Size	Specification or Number	Type
Static Line	Nylon webbing	1	1	16' 3"		1"		Tubular
Static line, short piece	Nylon webbing	2	1	34"		1"		Tubular
Filler, snap	Webbing	3	1	6"		1-3/4"		
Snap	Metal	4	1			1-3/4"		
Thread	Nylon	5						
Cargo strap	Nylon Webbing	10	1	Required length		1-3/4"		
Adapter	Metal	11	1			1-3/4"	MIL 48A7053	
Cross Tie	Nylon webbing	20	1	42"		1-3/4"		

28"

SECTION A - A

28"

3"

SECTION B - B

3"

SECTION C - C

NOTE:
      STAPLE
PARTS NO. 1
TOGETHER. GLUE
PARTS NO. 2 IN
POSITION SHOWN.

28"

14

B

A

A

28"

3"

3"

3"

B

C   C

PALLET, DISPOSABLE
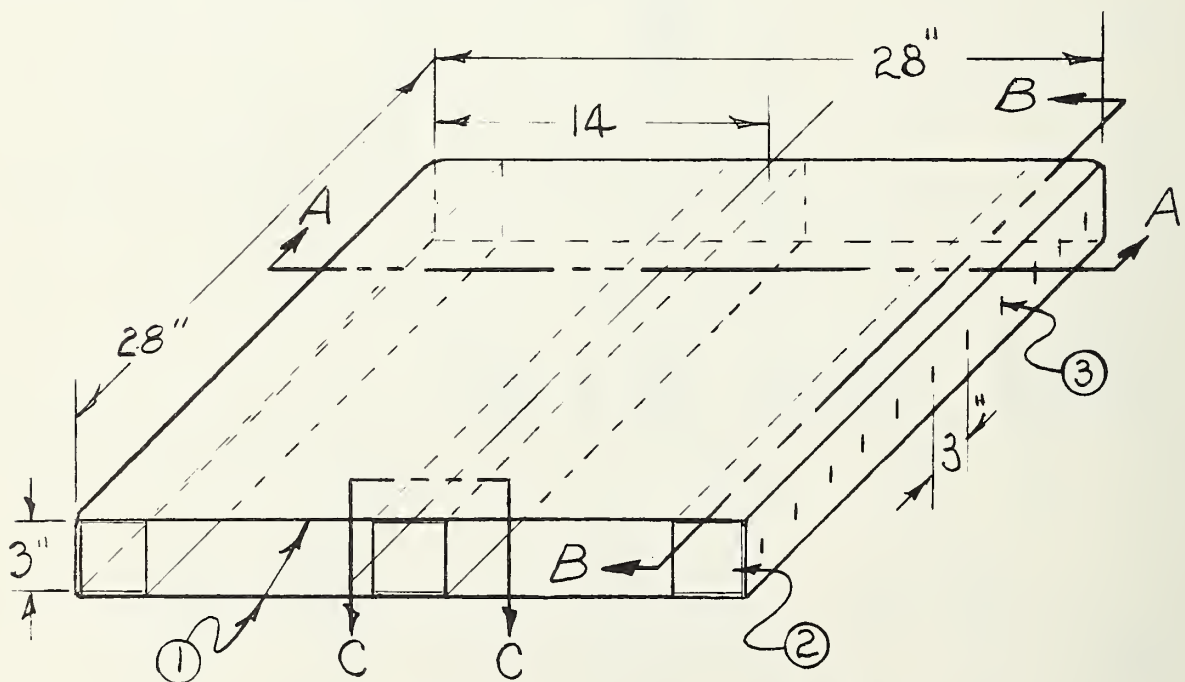
ED - 237 - R1

MATERIALS LIST - PALLET, DISPOSABLE

Name	Material	Part No.	No. Req	Cutting Size	Color	Size	Specification or Number	Type
Surfaces	Fiberboard	1	2	38" x 28"	(Note: 34" dimension is in cross-machine direction.)	34"	600-pound, double wall (AB Flute) fiberboard	Corrugated
Rails	Paper Honeycomb	2	3	28"x3"x3"			3" paper honeycomb, 3/8" cell size, 40-50 pound Kraft 15% (approx.) impregnation, no (0) facings.	
Staples or stitching wire	Metal	3	24 (approx.)				Staples shall have a minimum size of 103020 - 9/16	